

# FOREST CONTROL

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B.23  
In 81  
115

## by CONTINUOUS INVENTORY

"Today I have grown taller from walking  
with the trees."

...Karle Wilson

Milwaukee, Wis. October, 1963 No. 115

### USING THE LEFT-HANDED DIAMETER TAPE

"The right way is to hold the box end of the tape in the left hand. Then pull the tape out of the box, from the back of the tree with the right hand. Pull back and forth to set the tape firmly and horizontally about the trunk. Cross the right hand under the left, pull tight, and read in the front of the tree.

This is the way the manufacturer made the tape to be used. Try it a few hundred times for practice. If you do you will soon see that when the tape is used left-handed the numbers are right-side up. The graduations come together on the upper and lower sections of the tapes at the point of reading. The tape is read from left to right, as tapes are most generally intended to be read. The line of sight to the whole face of the tape is clear and unobstructed, the pull is strong and the tape is tightly wrapped around the tree.

The wrong way most commonly used is with the tape box in the right hand. Try it and you will see that the numbers are upside down, the intermediate graduations do not come together at the point of reading, and the tape must be read from right to left."

Excerpts from "Techniques for  
Using Unpainted Steel Diameter  
Tapes"

U. S. Dept. of Agriculture  
Forest Service  
Milwaukee, Wisconsin



*The Forester*



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TREE GROWTH MEASUREMENTS AND THAT CANTANKEROUS DIAMETER TAPE

After 30 years of striving for perfection in the use of the diameter tape, it does not seem wrong to personify it as a cantankerous tool. It is a difficult instrument to use, and errors resulting from misuse are much more serious than most foresters believe.

It is not a matter, mind you, of accepting approximate answers because the tape is not a precise instrument, or because the measured diameter, even with precise techniques, can never be absolutely correct. It is important to apply the tape with standard and precise techniques at all measurements and remeasurements, regardless of these factors. High precision methods are necessary in spite of inherent weaknesses in the tool itself, or inherent errors resulting from the non-cylindrical and unstable bole. Although small in proportion to the diameter, the 1/10" D-tape error is often large in its effect on volume growth.

One series of 7 CFI plot checks this season revealed that one-fourth of the tree diameters were 1/10" or more too high. These errors occurred in spite of extraordinary care in demonstration, training and supervision, and regardless of the fact that two prior checks had been made on all cruisers. It was clear that none of the men were convinced of the importance of this phase of permanent plot inventory, nor had they yet learned to use the standard tape technique.\* But they know it now. Subsequent checks reveal only occasional errors in tree diameter and no errors in excess of 1/10".

It is obvious that D-tape sickness can be cured, but it is essential to provide an early inoculation for the anticipated trouble. This inoculation at the outset of the project consists of a trial run strip of 50 numbered trees to be measured in training, and booster shots in the form of plot checks at regular intervals thereafter. Above all, never believe the chief of party who tells you his men are well trained and need no checks. In such cases begin your checks on the chief himself. Nothing is more convincing, or revealing.

Two failures are involved once the standard tape technique has been accepted. The first of these is philosophical. The forester is imbued with the thought that forestry is an inexact science. He assumes that the error is small, that similar errors are bound to occur at remeasurement time, and that with luck, they will compensate anyway. Not one of these assumptions is valid. A crooked D-tape most often results in a false DBH which is larger than the true DBH. The frequency and size of this error are never consistent and cannot be guaranteed to recur at remeasurement. Personal errors cannot be depended upon to rectify themselves. They are cumulative rather than compensating.

The second failure is one of technique. Most cruisers have the common tendency to pull up the tape in the front of the trunk. They seldom place the tape at right angles to the lean, and even when the tree is

\* Techniques for Using Unpainted Steel Diameter Tapes,  
U. S. Department of Agriculture, Forest Service,  
Milwaukee, Wisconsin

perfectly perpendicular and on level land, the tape is often 1" to 2" high in front. Experienced checkers can easily detect this error from the opposite side of the plot. They can also detect the uncertain tape technician who fumbles with his tool, putting it on the trunk, letting it fall down behind the tree, pulling it up in front several times and otherwise fidgeting with it. The standard technique does not require these extraordinary maneuvers and manipulations.

The effect and extent of minor diameter errors on volume growth are serious over short remeasurement periods. The example previously mentioned is especially thought provoking in its details.

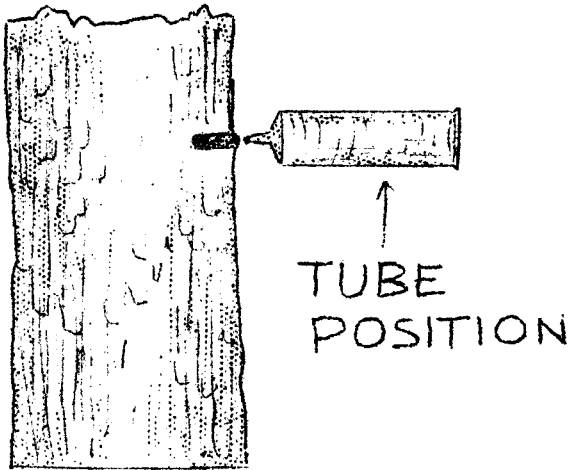
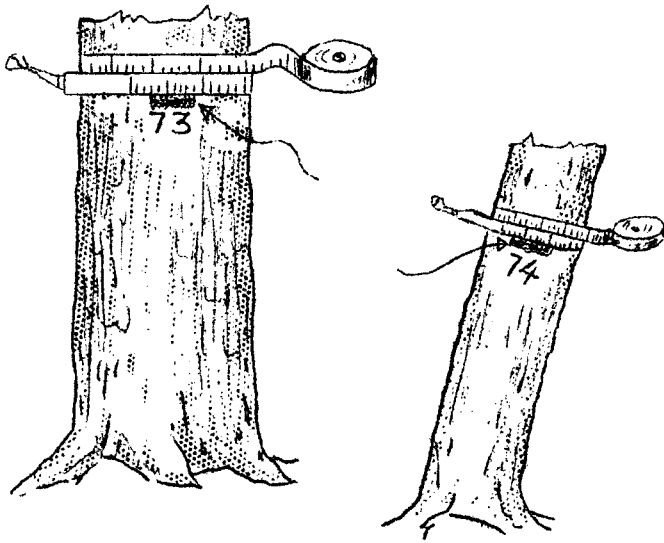
Seven complete plots of 1/5-acre size were remeasured by a committee of 3 capable checkers who agreed upon the results. Of the 262 trees in the plots, 36 sawlog trees and 32 cordwood trees had plus diameter errors of 1/10" to 3/10". There were no minus diameter errors. Borderline cases were excluded from the record and the original cruiser was given the benefit of the doubt in all marginal cases.

The net board foot difference due to diameter errors in the sawlog trees was 171 board feet. Reduced to a per-acre basis, this difference falsely increased the stand volume 122 board feet per acre. Assuming that these plots were representative of the 130,000 acres of sawlog stands on this forest, the expanded volume difference amounted to 15,860,000 board feet.

Now, if measurements are high at record 1, and correct at measurement 2, the difference between the two measurements is smaller than it should be. This causes a growth loss. If we assume then, that the tape technique will be proper at measurement 2 three years hence, the differences or errors actually become growth losses of serious proportions. The per-acre per year growth loss on the 7 check plots is 40.7 board feet net. Assuming again that these plots truly represent the 130,000 acre sawlog area, the expanded growth loss becomes 5,286,667 net board feet per year.

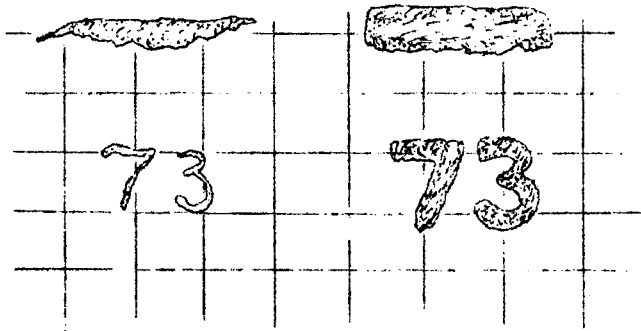
CAL STOTT  
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Region 9  
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PAINT MARK POSITION



IMPROPER  
DBH MARK  
AND NUMBER

PROPER  
DBH MARK  
AND NUMBER



Scale = 1 inch Squares

By the time this newsletter is received more than 100,000 tube paint tree numbers and DBH marks will have been made on trees in CFI plots this year. All of this experience has more than proved the efficacy of tube paint techniques. The paint marks show every promise of remaining legible 10 years or more if the paint is properly applied.

The tube may be held with one or two hands but always at right angles to the trunk. Place the tip of the nozzle very close to the tree so that when the paint is forcefully squeezed out of the tube it can be flattened on the surface of the bark. This makes a broad, flat number which will adhere longer than a narrow, roll-like ribbon of paint. Numbers made properly are easily read if 1" or 2" high. White, orange and yellow paints have the best visibility. Those who hold the tube like a lead pencil should endeavor to keep it at right angles to the trunk.

Wet trees or smooth barked trees like birch and aspen sometimes lose their paint numbers. With these species be sure to place the paint numbers on rough and darkened spots wherever possible. In conifers the paint marks should be placed in the crevices and not on the broad plates.

DBH marks should be flattened against the bark and not more than 1" or 2" long. Special effort is needed to keep a straight edge on the top of the mark.

Paint tube DBH marks are thick. The D-tape cannot be placed over the paint as with previous marking methods. When measuring diameters hold the left thumb nail at the exact lower edge of the tape and mark this point with a straight-edged short line of paint. The lower edge of the D-tape is placed just above and touching the straight upper edge of the paint mark at each remeasurement.